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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/610,748	07/06/2000	Young-Hwa Kim Ph. D.	2539738-78377	5015

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EXAMINER	
PIERCE, JEREMY R	

ART UNIT	PAPER NUMBER
1771	

DATE MAILED: 05/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/610,748	KIM PH. D. ET AL.	
	Examiner	Art Unit	
	Jeremy R. Pierce	1771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 November 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *84-87 and 89-111* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *93-99,104 and 105* is/are allowed.

6)☒ Claim(s) *84-87,89-92,100-103 and 106-111* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/20/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed on November 28, 2003 has been entered. Claims 84, 100-102, 104, and 106 have been amended. Claims 88 and 112 have been cancelled. The amendment is sufficient to overcome the 35 USC 102 rejections set forth sections 5-7 because Patchett (WO 93/21492) does not teach the gaps between the plates are approximately linear to one another or the claimed gap width or the claimed plate thickness; Schaumann (U.S. Patent No. 1,758,296) does not disclose the claimed gap width or the claimed plate thickness; and Harpell (U.S. Patent No. 5,196,252) does not disclose the gap width.

Specification

2. The disclosure is objected to because of the following informalities: Applicant now recites the presence of "approximately linear gaps" in claims 84, 100, and 106. Although the limitation can be seen in the Drawings, such as Figures 9, 11, 18, 20, and 22, the specification does not have language that coincides with the claim language. Similar objection is made with the "approximately identical metal plates" limitation found in claim 84. The Examiner requests that Applicant incorporate supporting language in the specification for the new claim limitations. No new matter should be added.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 100-103 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 100 recites "each substrate is capable of movement relative to the other substrates." Support for this limitation is not found in the specification.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 106-111 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harpell (U.S. Patent No. 5,196,252).

Harpell discloses a multi-layered fiber-containing article having a plurality of non-metallic plates affixed to a surface of the article (column 3, lines 7-11). The article comprises two flexible substrate layers arranged in a stack with plates arranged on opposing sides (Figures 3). Harpell also disclose embodiments where the gaps are

approximately linear (Figures 11 and 12). Harpell does not disclose the gap width to be between 5 and 20 mils. However, the width of the gaps is a result effective variable in making the article. Decreasing the gap width would offer improved ballistic resistance whereas increasing the gap width would increase flexibility. It would have been obvious to one having ordinary skill in the art to use a gap width between plates of between 5 and 20 mils in order to increase ballistic resistance, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). With regard to claim 107, a third flexible substrate can be found between the two outer substrate layers (Figure 3). With regard to claim 108, the fibrous layers can be woven fabrics (column 6, lines 36-41). With regard to claim 109, the plates are made from polymeric material (column 15, lines 4-28). With regard to claim 110, the woven fabrics may be nylon (column 7, lines 36-46). With regard to claim 111, the plates may be hexagonal in shape (column 14, lines 47) and would inherently be larger than 80 mils in diameter as a ballistic resistant material.

7. Claims 84-87, 90, 91, 100-103, and 106 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patchett (WO 93/21492) in view of Kobren (U.S. Patent No. 5,953,751) and further in view of Cunningham (U.S. Patent No. 5,601,895).

With regard to claim 84, Patchett discloses a sheet material suitable for use in body armor comprising a flexible layer and a layer of discrete plates (page 2, lines 1-6). Patchett discloses the plates may be made out of metal or polymeric resin (page 4, lines 24-32), and the plates may be identical to one another (see Figure 4). Patchett also

discloses the material of the invention may be produced in many ways to have diverse uses (column 2, lines 7-11). However, Patchett does not disclose the penetration resistant material to be used as a surgical glove. Kobren also discloses a penetration resistant flexible material comprising a web material and a layer of discrete plates (column 1, lines 5-6). Kobren teach the material to be useful as a surgical glove (column 1, lines 44-46). Kobren disclose the plates of the glove can be metal or polymeric resin (column 1, lines 55-56) and be between 0.01 and 0.2 mm thick (column 2, line 63). It would have been obvious to one having ordinary skill in the art to use plates between 0.1 and 0.2 mm thick in the penetration resistant material of Patchett in order to make the material useful as a glove for preventing needle penetration, as taught by Kobren. With regard to the gap width limitations of from 5 mils to 20 mils, Kobren discloses making the gap widths between 0.01 mm and 0.2 mm (column 2, line 64). Additionally, Patchett teaches that the degree of flexibility is determined by adjusting the separation between adjacent plates (column 2, lines 20-34). It would have been obvious to one having ordinary skill in the art to make the gap width between 5 and 20 mils according to the teachings of Patchett, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. With regard to the non-overlapping limitation, Patchett discloses embodiments for overlapping plates and non-overlapping plates (Figures 6A and 6B). Patchett also do not teach the gaps defined between adjacent plates are approximately linear. Cunningham discloses that the equilateral hexagon is sufficient for preventing needle penetration into a glove (Figure 6). It would have been obvious to one having ordinary

skill in the art to use an equilateral hexagon in the Patchett article in order to be able manufacture the article more expediently without having to cut the jigsaw pattern and thus saving on costs, since Cunningham teaches that the hexagon shape is sufficient to provide penetration resistance. With regard to claim 85, Patchett disclose the plate material may be steel (page 4, line 28). It would have been obvious to one having ordinary skill in the art to use stainless steel, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. *In re Leshin*, 125 USPQ 416. With regard to claim 87, the plates of Patchett (page 9, line 10) and Cunningham are based on hexagons. With regard to claim 91, Patchett disclose the plates are bonded to the flexible layer via adhesive (page 4, line 10).

With regard to claim 100, Patchett discloses a multi-layer arrangement can be made having three flexible layers and three layers of rigid plates (Figures 8A and 8B). The substrates would be capable of movement relative to one another because the material is not rigid (column 2, line 3).

With regard to claim 106, Patchett show two layers of plates joined to opposing sides of a flexible substrate (Figure 7B). Patchett also discloses the flexible layer may be a laminate comprising different materials (page 7, lines 9-11). So there would be two flexible substrates present.

8. Claim 89 is rejected under 35 U.S.C. 103(a) as being unpatentable over Patchett in view of Kobren and Cunningham and further in view of Nishimura (U.S. Patent No. 5,156,900).

Patchett teach the flexible layer may be woven or nonwoven textile material so long as it is gas permeable (page 5, lines 10-16), but do not teach it to comprise polyurethane and nylon synthetic leather. Nishimura disclose a porous leather material that is made from polyurethane and nylon (column 4, lines 10-46). It would have been obvious to one having ordinary skill in the art to use the porous leather substrate disclosed by Nishimura as the flexible substrate in Patchett, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use.

9. Claim 92 is rejected under 35 U.S.C. 103(a) as being unpatentable over Patchett in view of Kobren and Cunningham and further in view of LeGrand et al. (U.S. Patent No. 4,861,666).

Patchett disclose using adhesive to bond the plates to the substrate, but do not disclose polyurethane adhesive. LeGrand et al. disclose polyurethane as a well-known adhesive suitable in the art of puncture resistant material (column 3, lines 15-19). It would have been obvious to one having ordinary skill in the art to use polyurethane adhesive, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use.

Allowable Subject Matter

10. Claims 93-99, 104, and 105 are allowed.

Response to Arguments

11. Applicant's arguments filed November 28, 2003 have been fully considered but they are not persuasive.

12. Applicant argues that the gaps in Patchett are not linear. The Examiner agrees. However, linearity of the gaps can be derived by combination with the Cunningham reference, since Cunningham teaches using equilateral hexagons. Motivation for combining references is the increased ease of manufacturing by avoiding having to cut complicated jigsaw shaped plates, as set forth above in the rejection.

13. Applicant argues that Harpell teaches in a preferred embodiment that the plates form an alternating pattern of covered and uncovered areas, and therefore the gaps are not approximately linear. While Harpell does teach such an embodiment, the Harpell reference is not limited to that single embodiment. Harpell also teaches plate arrangements where the gaps would be approximately linear (see Figures 11 and 12).

14. Applicant argues that Harpell teaches away from narrow gaps between adjacent plates because Harpell another layer of plates attached to another substrate is designed to cover the uncovered areas on the first substrate, perhaps for flexibility. However, Harpell also disclose embodiments showing the gap width to be substantially small (Figures 11 and 12). Additionally, the Examiner set forth gap width as the adjustment of a result effective variable that a person of ordinary skill in the art would be able to obviously optimize. Although flexibility may be gained with larger gaps, increased puncture resistance may be gained with smaller gaps. The Examiner maintains that decreasing the gap size would be obvious to a person having ordinary skill in the art, as set forth above.

15. Applicant argues that Harpell discloses a plurality of holes for stitching each plate to the surface, and therefore the plates are not continuous. While Harpell does disclose placing holes in the plates for stitching, Harpell also teaches the plates may be attached using adhesive instead of stitching (column 16, line 1). The holes in the plates would not be needed when attaching with adhesive, and the plates would be continuous.

16. Applicant argues that once would not combine Kobren with Patchett because the gap dimension of Kobren is so narrow that if used in between the interlocking plates of Patchett's body armor, the plates would be unable to move relative to one another. The Examiner disagrees. Although narrowing the gap size may increase the chance of the plates interlocking, Kobren also teach to use plates with a thickness of 0.01 to 0.2 mm. Decreasing thickness of the plates would allow a person skilled in the art to place them closer together. Using the thinner plates with the narrower gap size would allow the plates to freely move and avoid locking with one another.

17. Applicant argues that Kobren teaches the metal plates to not be approximately identical. However, Applicant's claims only require that a plurality of plates be approximately identical. Applicant does not claim that all plates must be identical to one another in the entire fabric assembly. Kobren shows one embodiment where a plurality of plates are approximately identical (Figure 3).

18. Applicant argues that Kobren does not teach using metal plates. However, Patchett cures this deficiency because Patchett teaches the plates may be made from either polymeric resin or metal (page 4, lines 24-32).

19. Applicant argues that the discs of Kobren are not affixed to the top surface of a flexible substrate because they lie on top of stems. However, Applicant's claims do not preclude stems. The discs of Kobren are affixed to the top surface of the flexible substrate via the stems.

20. Applicant argues that Kobren do not show a linear gap with circular discs. However, the Cunningham reference is used to cure this deficiency, as set forth above in the rejection.

21. Applicant argues that Kobren does not include a multi-layer structure of pluralities of plates being affixed to substrates where each substrate is capable of movement relative to the other substrates. However, Kobren is no used in the rejection to show this feature. Kobren is used to show gap width and plate thickness useful in penetration resistance gloves. The layers of Patchett are capable of such movement.

22. Applicant argues that the last Office Action had not indicated a suggestion to combine the Nishimura reference or the LeGrand reference. Nishimura teach that substrates in penetration resistant articles may suitably be formed of porous leather. LeGrand teaches polyurethane is a suitable adhesive when making penetration resistant articles. The references are combinable because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. *In re Leshin*, 125 USPQ 416.

Conclusion

23. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy R. Pierce whose telephone number is (571) 272-1479. The examiner can normally be reached on Monday-Thursday 7-4:30 and alternate Fridays 7-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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JRP

JRP

ELIZABETH M. COLE
PRIMARY EXAMINER